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(54) Composite iridium-metal-oxygen barrier structure with refractory metal companion barrier and method for its fabrication

(57) An Ir-M-O composite film (18) has been provided that is useful in forming an electrode of a ferroelectric capacitor, where M includes a variety of refractory metals. The Ir combination film is resistant to high temperature annealing in oxygen environments. When used with an underlying barrier layer (14) made from the same variety of M transition metals, the resulting conductive barrier also suppresses to diffusion of Ir into any underlying Si substrates. As a result, Ir silicide products are not formed, which degrade the electrode interface

characteristics. That is, the Ir combination film remains conductive, not peeling or forming hillocks, during high temperature annealing processes, even in oxygen. The Ir-M-O conductive electrode/barrier structures are useful in nonvolatile FeRAM devices, DRAMs, capacitors, pyroelectric infrared sensors, optical displays, optical switches, piezoelectric transducers, and surface acoustic wave devices. A method for forming an Ir-M-O composite film barrier layer (18) and an Ir-M-O composite film ferroelectric electrode are also provided.

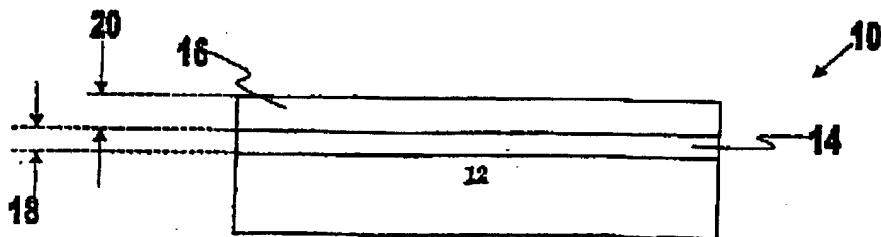


Fig. 1

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## EUROPEAN SEARCH REPORT

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The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
THE HAGUE	1 November 2002	Micke, K	
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X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons S: member of the same patent family, corresponding document	

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